



PHILCO

REG. U.S. PAT. OFF.

Service Bulletin No. 217



Model 610

Type Circuit: Superheterodyne, with pentode output (3 watts); built in connections for Philco All-wave aerial; aerial selector built into and operated by wave-band switch.

Power Supply: Alternating Current. Voltage and frequency as specified on chassis nameplate.

Tubes Used: 1 type 6A7, Detector-Oscillator; 1 type 78, I.F.; 1 type 75, 2d Detector and 1st A.F.; 1 type 42 Output; 1 type 80 Rectifier.

Wave Bands: Three—(1) standard (with some Police); (2) Police; (3) Short-wave.

Coverage of Each Band: Band 1, 530-1720 K.C.; Band 2, 2300 to 2500 K.C. (2.3-2.5 M.C.); Band 3, 5700-18000 K.C. (5.7 to 18.0 megacycles).

Tuning Drive: Dual planetary, ball bearing. 50 to 1 ratio for slow-speed tuning.

Tone Control: 2-position.

Intermediate Frequency: 460 K.C.

Power Consumption: 54 watts.

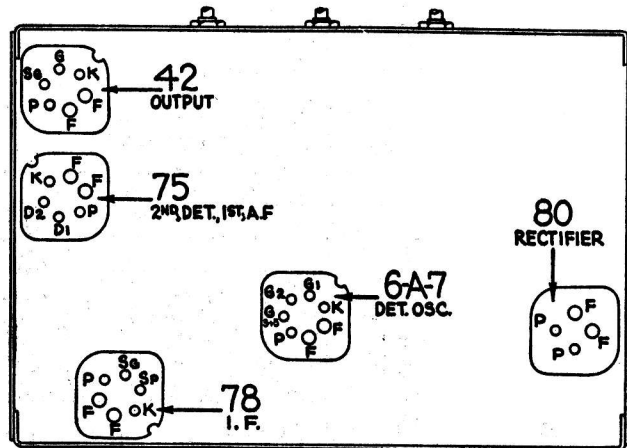


Fig. 1. Tube Sockets as viewed from bottom.

Tube Socket Voltages Measured to Ground

Tube	6A7 Det. Osc.	78 I.F.	75 2d Det.	42 Output
Point P	255	250	145	238
SG	85	85	...	255
K	2.3	2.5	...	...
6A7: G ₃ & 5 = 147				

Above voltages were obtained by using a PHILCO type 025 Circuit Tester (or 048A All-purpose Tester), using test prods applied to underside of chassis. Volume control at maximum; dial at 55; waveband switch counter-clockwise (band 1). Use Fig. 1 for test points.

Power Transformer Data

Terminals	A.C. Volts	Current	Circuit	Color
1-2	120	.....	Primary	White
3-5	680	65 M.A.	Secondary	Yellow
6-7	5.0	2.0 A.	Fil. Rect.	Blue
8-9	6.3	2.2 A.	Filaments	Black
4	...	.....	Center Tap of 3-5	Yellow, Green Tracer

Adjusting Compensating Condensers

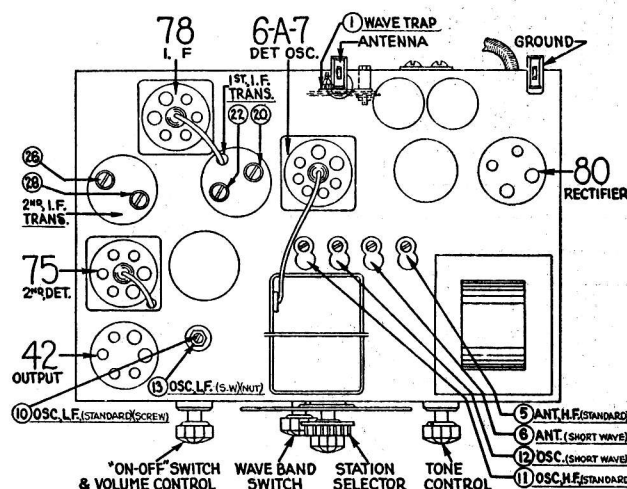


Fig. 2. Locations of Compensating Condensers

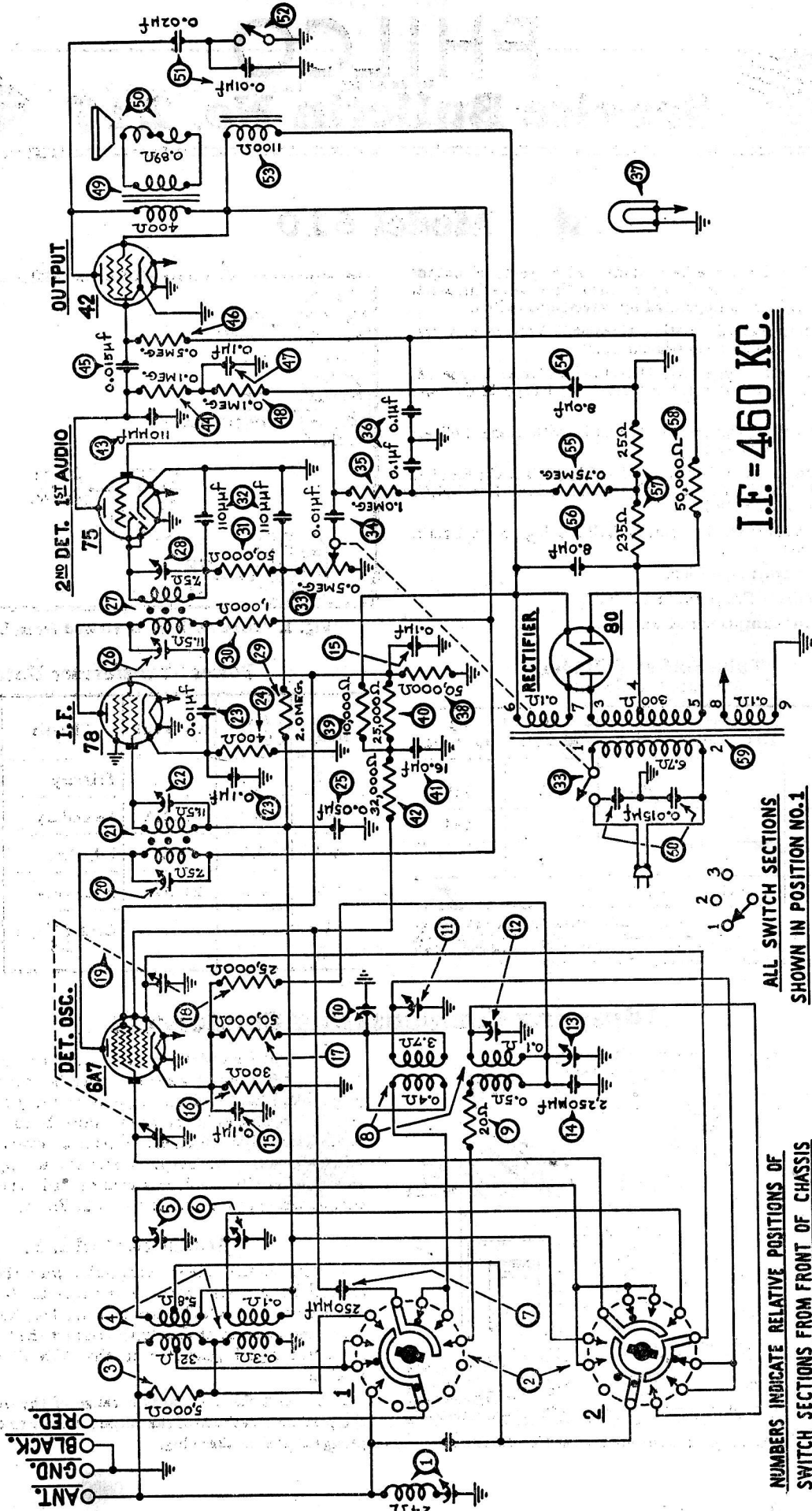
The adjustment of the compensating condensers in Model 610 requires a signal generator covering the broadcast and police band, and also one capable of producing a signal at certain frequencies in the short wave band. The Philco Model 088 All-Wave Signal Generator covers these requirements perfectly. An output meter is also required. Philco Model 025 or 012 unit is recommended. The location of all compensating condensers is shown in Fig. 4.

Adjustment of I. F.

1. Remove the antenna connection from the receiver, disconnect the grid clip from the first detector (type 6A7 tube), and connect the "ANT" output terminal of the signal generator to the grid cap of this tube; connect the "GND" terminal of the signal generator to the "GND" terminal of the receiver.

2. Connect the 0 to 30 volt range of the output meter to the plate and cathode of the output tube or to the two bottom prongs of the speaker plug.

Fig. 2. Schematic Diagram of Model 610



I.F. = 460 KC.

ALL SWITCH SECTIONS
SHOWN IN POSITION NO. 1

NUMBERS INDICATE RELATIVE POSITIONS OF
SWITCH SECTIONS FROM FRONT OF CHASSIS

Replacement Parts—Model 610

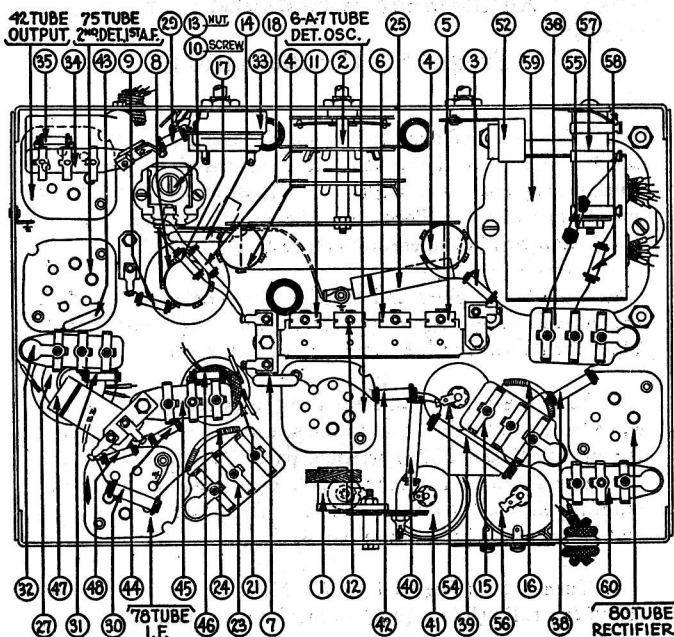


Fig. 3. Bottom View of Chassis

Description	Part No.	List Price
① Wavetrap.....	38-6777	\$1.00
② Waveband Switch.....	42-1112	1.10
③ Resistor (5000 ohms) (Green, Black, Red).....	6096	.20
④ Antenna Transformer.....	32-1669	1.15
⑤ Compensating Condenser (Antenna, Standard).....	Part of 31-6047	.50
⑥ Compensating Condenser (Antenna, S.W.).....	Part of 31-6047	.50
⑦ Condenser (.00025 Mfd. Mica).....	5858	.35
⑧ Oscillator Transformer.....	32-1670	1.40
⑨ Resistor (20 ohms) (Red, Black, Black).....	33-1206	.20
⑩ Compensating Condenser (Osc. L.F. Standard) (Screw).....	Part of 31-6027	.70
⑪ Compensating Condenser (Osc. H.F., Standard).....	Part of 31-6047	.50
⑫ Compensating Condenser (Osc. S.W., H.F. End).....	Part of 31-6047	.50
⑬ Compensating Condenser (Osc. S.W., L.F. End) (Nut).....	Part of 31-6027	.70
⑭ Condenser (.00225 Mfd. Mica).....	30-1055	.40
⑮ Condenser (.09 Mfd. Twin Bakelite Block).....	4989-DG	.40
⑯ Resistor (300 ohms Flexible) (Orange, Black, Brown).....	33-3010	.20
⑰ Resistor (50000 ohms) (Green, Brown, Orange).....	6098	.20
⑱ Resistor (25000 ohms) (Red, Green, Orange).....	33-1013	.20
⑲ Tuning Condenser Assembly.....	31-1528	3.75
⑳ Compensating Condenser (1st I.F. Primary).....	Part of ⑳	....
㉑ 1st I.F. Transformer.....	32-1671	1.35
㉒ Compensating Condenser (1st I.F. Secondary).....	Part of ㉑	....
㉓ Condenser (.09 Mfd., and .01 Mfd. Bakelite Block).....	4989-FU	.40
㉔ Resistor (400 ohms Flexible) (Yellow, Black, Brown).....	33-3016	.20

Description	Part No.	List Price
㉕ Condenser (.05 Mfd. Tubular).....	30-4020	\$0.35
㉖ Compensating Condenser (2nd I.F. Primary).....	Part of ㉗	....
㉗ 2nd I.F. Transformer.....	32-1672	1.35
㉘ Compensating Condenser (2nd I.F. Secondary).....	Part of ㉗	....
㉙ Resistor (2 Megs.) (Red, Black, Green).....	33-1025	.20
㉚ Resistor (1000 ohms) (Brown, Black, Red).....	5837	.20
㉛ Resistor (50000 ohms) (Green, Brown, Orange).....	6098	.20
㉜ Condenser (.00011 Twin Bakelite Block).....	8035-DG	.25
㉝ Volume Control & On-Off Switch.....	33-5106	.85
㉞ Condenser (.01 Mfd. Bakelite Block).....	3903-SU	.25
㉟ Resistor (1 Meg.) (Brown, Black, Green).....	33-1096	.20
㊱ Condenser (.1 Mfd. Twin Bakelite Block).....	4989-DG	.40
㊲ Pilot Lamp.....	34-2064	.09
㊳ Resistor (50000 ohms) (Green, Brown, Orange).....	4237	.20
㊴ Resistor (10000 ohms) (Brown, Black, Orange).....	3524	.20
㊵ Resistor (25000 ohms) (Red, Green, Orange).....	3656	.20
㊶ Condenser (Electrolytic—16 Mfd.).....	30-2118	1.65
㊷ Resistor (32000 ohms) (Orange, Red, Orange).....	5279	.20
㊸ Condenser (.00011 Mfd. Mica).....	30-1031	.35
㊹ Resistor (.1 Meg.) (Brown, Black, Green).....	6099	.20
㊺ Condenser (.015 Mfd. Bakelite Block).....	3793-SU	.35
㊻ Resistor (.5 Meg.) (Yellow, White, Yellow).....	6097	.20
㊼ Condenser (.1 Mfd. Tubular).....	30-4170	.35
㊽ Resistor (.1 Meg.) (White, White, Yellow).....	6099	.20
㊾ Output Transformer.....	32-7019	1.25
㊿ Cone & Voice Coil Assembly (P-27 Speaker).....	02861	.65
① Condensers (in Tone Control).....	Part of ②	....
② Tone Control.....	30-4318	.50
③ Field Coil & Pot Assembly (P-27 Speaker).....	36-3341	2.75
④ Condenser (Electrolytic—8 Mfd.).....	30-2025	1.35
⑤ Resistor (750000 ohms) (Violet, Green, Yellow) (½ Watt).....	33-1203	.20
⑥ Condenser (Electrolytic) (8 Mfd.).....	30-2025	1.35
⑦ Resistor (B.C. Wire-wound, 235 ohms, 25 ohms).....	33-3037	.20
⑧ Resistor (50000 ohms) (Green, Brown, Orange).....	6098	.20
⑨ Power Transformer (110 volts 60 cycles).....	32-7381	4.00
(110 volts 25 cycles).....	32-7382	6.25
(230 volts 50 cycles).....	32-7383	4.50
⑩ Condenser (.015 Mfd. Twin Bakelite Block).....	3793-DG	.40
Dial Assembly.....	31-1539	.30
Tube Shield Body.....	28-2726	.10
Tube Shield Base.....	28-2725	.03
Four Prong Socket.....	27-6034	.10
Six Prong Socket.....	27-6036	.11
Seven Prong Socket.....	27-6037	.11
Knob (Station Selector).....	27-4206	.12
Knob (Fine Tuning).....	27-4207	.10
Knob (Volume, Waveband and Tone Control).....	27-4208	.10
Bezel.....	27-2928	.35
Bezel Glass.....	27-7887	.60

3. Adjust the signal generator to a frequency of 460 K.C. Place the receiver in operation with the dial turned to the low frequency end of the standard broadcast band, wave band switch to extreme left (clockwise), and have the volume control adjusted near its maximum setting. Adjust the signal generator attenuator for approximately half-scale reading of the output meter.

4. The I.F. compensating condensers are located at the tops of the I.F. coil shields and adjusted by turning the two screws in top. Adjust condensers ② and ③ (2d I.F. primary and secondary) for maximum reading in the output meter, and then condensers ④ and ⑤ (1st I.F. primary and secondary).

Adjustment of Wave-Trap

1. Connect the signal generator leads to the antenna and ground terminals of the receiver. Replace the grid clip on the 6A7 grid cap.

2. With the wave-band switch of the receiver still in the extreme left (broadcast position), turn the station selector to 550 K.C.

3. With the signal generator in operation at 460 K.C., adjust the wave-trap ① condenser until a MINIMUM reading is obtained on the output meter. The Philco fibre wrench, part No. 3164, is used for this adjustment. The wave-trap compensator is reached from rear of chassis.

Adjustment of High and Low

Frequency Compensators

1. With the wave-band switch still at Position No. 1 (broadcast band), set the dial at 1600 K.C. Set the signal generator at this frequency and adjust compensators ⑪ and ⑫ for maximum output. These are the oscillator and antenna "H.F. standard" compensators respectively.

2. Tune the receiver and the signal generator to 600 K.C. and adjust compensator ⑬ (screw) for maximum output. This is the oscillator L.F. standard compensator.

3. Turn the wave-band switch to the extreme right (short-wave band) and adjust the station selector to 18.0 megacycles. By means of the Philco wrench, part No. 3164, adjust the oscillator S.W., and antenna S.W. compensators for maximum reading in the output meter. These are numbered ⑭ and ⑮ respectively in figure No. 4.

4. Turn the tuning dial to 7.2 M.C., and adjust condenser ⑯ osc. L.F., (S.W.) (nut) to maximum signal.

BUILD UP YOUR BUSINESS through the publicity being given RADIO MANUFACTURERS SERVICE

Every purchaser of a Philco Model 610 is informed in the instruction sheet packed with the set, that there is a member of **RADIO MANUFACTURERS SERVICE**

in his neighborhood. This is also told to the public regularly by Boake Carter on the air and by Philco national Radio Advertising in publications going into millions of homes. Get the benefit of this publicity by identifying yourself in your neighborhood as the local R.M.S. member about whom the public has been told.

We have provided a number of easy ways for you to do this. A large attractive outdoor metal sign (illustrated herewith), 20 x 28" in yellow and blue, carrying the R.M.S. emblem, is now available for you. A complete assortment of the R.M.S. stationery with the R.M.S. emblem and your own imprint will help you "tie-in" with R.M.S. publicity.

A number of new handbills on Service, Aerials and Accessories; letters and postcards for selling service and equipment; many new and powerful "ads" for these purposes have been prepared, and are now ready for you.

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